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Marianne Schüpbach

## **Extended education and social inequality in Switzerland: Compensatory effects?**

**An analysis of the development of language achievement with regard to structural and process-related aspects of social background**

### **Abstract**

*This contribution deals with the differential effects of process-related (using the example of family promotion) and structural aspects (exemplified by SES) of the family on the development of language achievement – in addition to effects of intensive attendance at extended education. Moreover, possible compensatory effects of extended education with regard to social disparities were investigated in a longitudinal study with a sample of  $N = 295$  students at 35 primary schools in 11 cantons in the German-speaking part of Switzerland. Results showed that, in addition to extended education, the process-related family aspect family promotion had a greater impact on the development of language achievement than the structural family aspect socio-economic status from the end of Grade 1 to the end of Grade 3. Extended education did not succeed in compensating for children's unfavorable social background, either in terms of low socio-economic status or in terms of family promotion.*

### **Keywords**

All-day schools; Socio-economic status; Family promotion; Academic achievement; Compensatory effect

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## **Ganztägige Bildung und soziale Ungleichheit in der Schweiz: kompensatorische Effekte?**

Eine Analyse der Sprachleistungsentwicklung unter Berücksichtigung von strukturellen und prozessualen Merkmalen sozialer Herkunft

### **Zusammenfassung**

Der vorliegende Beitrag beschäftigt sich mit den differenziellen Wirkungen familialer prozessualer (am Beispiel der *familialen Entwicklungsförderung*) und struktureller Merkmale (am Beispiel des *sozioökonomischen Status [SES]*) auf die Entwicklung der Sprachleistung – nebst Effekten der intensiven Nutzung der ganztägigen Bildung. Zudem wurde im Rahmen einer Längsschnittstudie mit einer Stichprobe von  $N = 295$  Schülerinnen und Schülern, in 35 Primarschulen, in 11 Kantonen der deutschsprachigen Schweiz der Frage nach möglichen kompensatorischen Effekten von ganztägiger Bildung (Ganztagsschule) hinsichtlich sozialer Disparitäten nachgegangen. Die Ergebnisse zeigen, dass nebst dem Effekt der ganztägigen Bildung das familiäre prozessuale Merkmal *Entwicklungsförderung* einen größeren Einfluss auf die Entwicklung der Sprachleistung hat als das familial strukturelle Merkmal *SES* von Ende 1. bis Ende 3. Schuljahr. Der ganztägigen Bildung gelingt es hinsichtlich einer ungünstigen sozialen Herkunft der Kinder nicht – weder bezüglich eines niedrigen *SES* noch bezüglich einer geringen *familialen Förderung* – einen kompensatorischen Effekt zu erzielen.

### **Schlagworte**

*Ganztagsschule; Sozioökonomischer Status; Familiäre Entwicklungsförderung; Schulleistung; Kompensatorischer Effekt*

## **1. Introduction**

In Switzerland, the issue of social inequality has been discussed for decades, even though legal equality is laid down in the Federal Constitution of the Swiss Confederation, Art. 8 Equality before the law: “Every person is equal before the law. No person may be discriminated against, in particular on grounds of origin, race, gender, age, language, social position, way of life, religious, ideological, or political convictions, or because of a physical, mental, or psychological disability”<sup>1</sup>. Social inequalities are connected with values and with conceptions of distribution and (social) positions. Especially the “linkage with relatively stable social relations and positions distinguishes social inequalities from other types of inequalities”

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1 “Alle Menschen sind vor dem Gesetz gleich. Niemand darf diskriminiert werden, namentlich nicht wegen der Herkunft, der Rasse, des Geschlechts, des Alters, der Sprache, der sozialen Stellung, der Lebensform, der religiösen, weltanschaulichen oder politischen Überzeugung oder wegen einer körperlichen, geistigen oder psychischen Behinderung.”

(Hradil, 2005, p. 29). According to Bourdieu and Passeron (1971), mechanisms of reproducing social inequality operate through education in modern (post-)industrial societies. For Switzerland, despite the educational efforts in recent decades, many studies have documented an impact of social background (Coradi Vellacott, 2007). The PISA studies, in particular, provide evidence for an association between social background and 15-year-old students' performance in reading, an association which has remained stable over the past decade (Konsortium PISA.ch, 2010). With respect to social inequality, reading performance in Switzerland corresponds to the OECD average (OECD, 2010). However, children's linguistic skills differ already when they enter kindergarten or primary school, due to their social background and in particular due to the different promotion of development provided in the family. This finding is documented, for example, in the evaluation of *Grundstufe* and *Basisstufe* [2] by Moser and Bayer (2010), a school experiment conducted at the school entry level in German-speaking Switzerland. *Grundstufe* or *Basisstufe* are organizational forms that combine preschool and the first years of primary school in Switzerland: The *Grundstufe* combines the two preschool years with the first year of primary school, *Basisstufe* the two preschool years and the first two years of primary school. The Moser and Bayer (2010) study also showed that the reading improvement of disadvantaged students largely parallels that of privileged students until the end of Grade 2, but that the difference in achievement increases towards the end of Grade 3. Findings such as this have triggered debate on schooling and the educational system as well as on the impact of primary and secondary effects of social background. Various studies demonstrate that the educational system is not able to decrease background-related primary disparities of educational participation, still less to compensate for them (Moser & Bayer, 2010). In research, social background is measured using different indicators, including structural aspects, such as socio-economic status (SES) of the family, and process-related aspects, such as the familial learning environment and promotion, which characterize social background. Social background is multifaceted. Thus, a more adequate picture of social inequality is revealed when both types of familial aspects are taken into account at the same time (Baumert & Maaz, 2006).

Traditionally, Germany, Austria, and Switzerland differ from most (European) countries and the United States in the length of the school day and in curricular and extracurricular activities, also called extended education in the afternoon. In response to social changes and the unfavorable results of the PISA studies, all-day schools are now starting to be established (Schüpbach, 2010). This means that schools are now offering extended education in addition to the regular hours of school instruction and extending the school day. In the education literature, the *Ganztagsschule*, or all-day school – the common name for a school offering extended education in Germany, Austria, and Switzerland – is widely considered to provide educational opportunities to improve the situation in the education system (Holtappels, 2006). Extended education at school should make it possible to move away from a purely instructional school and towards school as a world of experience and life. In German-speaking countries, an expanded concept of education

(in German *Bildung*) has been introduced (Rauschenbach et al., 2004), in which in addition to formal education, also non-formal and informal education are given more weight. Here, learning takes place not only in classroom instruction but also in non-formal, (organized) voluntary-attendance offerings or in an unplanned way triggered by inner or external impetus in the school, family, or peer environment (informal education). It is hoped that with extended education, the school can become a new kind of school. The focus should be on fostering all students' cognitive and social skills and on creating more equal opportunity in the education system (Herzog, 2009). For this reason, German-speaking countries have initiated the development of extended education as an education policy measure (for example, Germany's investment program, "Future education and care" (BMBF, 2003)). Extended education for school-age children in Germany, Austria, and Switzerland have consequently gained importance in recent years. Extended education in all-day schools is voluntary and has regular and scheduled meetings mostly on four to five days per week, but the students participating usually utilize the offerings only on two or three days a week. Today, extended education in Switzerland overall is mainly understood as supervised school lunch, homework club, and recreational activities such as sports and music. The offerings are not yet fully developed in Switzerland and are not closely related to subject-specific tasks like mathematics or reading – with the exception of the homework clubs. Students are free to choose them each day, so that normally they are not a program or course. Free play is accorded a high degree of importance, and all schools also offer homework help each day (Mangold & Messerli, 2005; Schüpbach, 2010). There are no fundamental differences between the offerings of extended education of the cantons. The activities are conceived as educational opportunities, which among other things aim to promote language skills and the integration of children with unfavorable social background. It can be assumed that the extended hours during which children are at school make possible enhanced promotion and support. For example, in Helmke's (2004) schooling and instruction model on the effects of instructional learning, one of the nine characteristics of quality is teaching quantity. According to the model, based on the state of research in teaching research, the effective and active teaching and learning time is decisive for school-subject effects and student achievement. It is the aim of the present contribution to examine the differential effects of structural and process-related family aspects of social background on the development of children at the beginning of primary school who attend all-day schools and extended education compared to children who do not. Further, we examine compensatory effects of intensive attendance at extended education.

## 2. Review of the literature

Research on the effectiveness of extended education has considerably increased over recent years, especially in German-speaking countries. There are findings on the effects of extended education on the development of students' achieve-

ment and findings pertaining to compensatory effects of extended education for children with disadvantaged social background. Regarding language achievement and its development generally, the EduCare study in Switzerland showed that students who attended extended education intensively, starting with significantly lower achievement in language after one school year, showed greater improvement in their language achievement at the end of Grade 3 than students who attended regular school instruction only (controlled for IQ and social background) (Schüpbach, 2012). That means that students who attend extended education generally can have a better development of language achievement. According to the latest findings of studies on all-day schools conducted in Germany, intensive attendance has a positive effect on school grades (Kuhn & Fischer, 2011). Bellin and Tamke (2010) found the same results when studying the same age group as in the EduCare study. In addition, studies in the United States also found a largely positive impact of attendance at after-school programs on student achievement (Durlak & Weissberg, 2007).

## **2.1 The effectiveness of extended education with consideration of social background**

In the German-speaking countries, there are only few studies on the specific question of compensatory effects of extended education for children with unfavorable social background and thus for primary disparities. In the EduCare study in Switzerland, students with low family promotion who attended extended education did not catch up with students with high family promotion and extended education in their language and mathematics achievement measured by tests from the end of Grade 1 to the end of Grade 3. There was no compensatory effect of the all-day school in this group of children (Schüpbach, 2012; Schüpbach, Herzog, & Ignaczewska, 2013). Similarly, in Germany, Schröder-Lenzen, and Mücke (2010) found that the all-day school, and therefore extended education, had no compensatory effects for primary school children. However, they focused on children from families with a migration background and not explicitly on children from families with low socio-economic status. In Germany, these two factors are often connected causes of social disparities (Müller & Stanat, 2006). Research in the United States has been investigating effects of adolescents' attendance at extracurricular activities and after-school programs – synonymous with extended education – for several years. The research has shown that especially children from families with lower socio-economic status profit from after-school programs, specific intervention programs. A meta-analysis by Lauer et al. (2006) based on 35 evaluation studies supported this finding for children at-risk in general (low-income families, low-performing children, minorities). When children attended after-school programs, they showed higher achievement in reading. This applied to students in primary and secondary school. Comparable results for children at-risk can be found in studies investigating especially academically-oriented or curriculum-related extended education (Mahoney, 2000).

Some more recent studies also looked at dosage, or intensity of attendance in extended education. According to Fiester, Simpkins, and Bouffard, (2005), four features of attendance can be distinguished: absolute attendance (participating versus not participating at all), attendance intensity (amount of time per week spent participating), attendance duration (length of period of time of participation, in years), and the range of content of the attended activities. As might be expected, the greater the student's intensity of attendance, the better the student's school achievement, but the research findings are not as clear as that. The StEG study in Germany, for instance, found the expected effect – the greater the attendance intensity, the more that the all-day school fostered marks – for school grades (Kuhn & Fischer, 2011). However, the results of a U.S. study by Roth, Malone, and Brooks-Gunn (2010) are not in line with this effect. But other U.S. studies found associations between attendance duration and school achievement, and many studies found an association between attendance intensity and school achievement (Simpkins, Little, & Weiss, 2004). This factor seems to be important for successful school achievement.

## **2.2 Differential effects of structural and process-related familial aspects on school achievement**

*Process-related aspects of the family:* The term “process quality in the family” subsumes education interactions and promotion of the child's development in the family (Schüpbach, 2010). It has been recognized for quite some time that parents have an influence on children's learning and achievement (see, for example, Pekrun, 2001). Socialization research has shown that the stimulation provided in the familial learning environment, hence process-related family aspects, play an important role in children's cognitive development. As educators, role models, and teachers, parents have a multifarious influence on their children's development of motives relevant for learning and achievement, on their attitudes and self-concepts, and thus indirectly on the development of their cognitive skills (Helmke & Weinert, 1997). Bradley and Caldwell (1995) provided evidence that a stimulating environment at home, and thus promotion of learning within the family, influences the cognitive development of the child, including general cognitive ability and language (for an overview, see Totsika and Sylva, 2004). Bradley and Caldwell (1995) measured the dimensions of the home environment with the Home Observation for Measurement of the Environment (HOME) Inventory. Helmke and Weinert (1997) pointed out that the associations between social background and school achievement can be traced back to differences in school achievement-related features of parental behavior, such as parents providing a stimulating environment and instruction.

*Structural aspects of the family:* Structural quality – the structural characteristics of the family – are understood in the following to be situation-independent framework conditions that are stable over time, within which process quality takes



place and which can have effects on process quality (Schüpbach, 2010). However, recent studies also reported a differential influence of structural aspects of the family, such as socio-economic status and migration background, on various spheres of competence. Several studies showed that the impact of familial background on reading skills is higher than its impact on orthographic skills (for an overview, see Schrader, Helmke, & Hosenfeld, 2008).

*Structural and process-related familial aspects:* A number of studies indicate that a home learning environment of poor quality is moderately associated with a low social background and lower levels of parental education (for an overview, see Anders et al., 2012). More recent differential analyses of the PISA data concerning the effects of social background on reading competencies demonstrated that the effects of structural aspects of the family (e.g., SES) are mediated by process-related aspects (for instance, cultural and communicative practice within the family) (Baumert & Maaz, 2006). In addition, process-related aspects had an effect on the stage of competencies as well (Maaz, Watermann, & Baumert, 2007). This illustrates that students' social background has different facets – both structural and process-related aspects of the family (Baumert & Maaz, 2006). In studies, however, students' social background is usually measured and systematized in terms of the *socio-economic status of their families*, mostly their father's or parents' occupation or occupational position. The indicator *social capital of the family* is used in research to capture structure, size, and occupational status of the family as well as parent-child relations. Both areas concern structural aspects of the family. Further indicators of social background can be subsumed under *cultural capital* (Bourdieu & Passeron, 1971), such as children's and their parents' national origin, parents' human capital (e.g., their highest educational level), the cultural practice of the family, i.e., the level of familial stimulation, process quality. To obtain a complete picture of the conditions of inequality a simultaneous consideration of structural and process-related aspects of the family is suggested (Baumert & Maaz, 2006). In addition, the existing findings in this field refer to the level of achievement and not to the development of students' achievement. In studies on the effectiveness of extended education and especially on its compensatory effects, that approach still constitutes a research deficit.

### 3. Research questions and hypotheses

Based on the state of the research described above, this study examined the following questions on the differential effects of structural and process-related family aspects of social background on the development of primary school students' language achievement with consideration of the students' attendance at all-day schools and extended education (unspecific activities as a form of general learning opportunities including homework club) in Switzerland. Further, we examined compensatory effects of intensive attendance. We focused on the following four research questions:



1. In addition to the effect of intensive attendance at extended education, do the process-related aspect *family promotion* and the structural aspect *SES* have an impact on the development of children's language achievement?
2. In addition to the effect of intensive attendance at extended education, is the effect of the family structural aspect *SES* mediated by the process-related aspect *family promotion*?
3. Does attendance at extended education have a compensatory effect for children with an unfavorable social background?
4. Is the compensatory effect stronger with regard to the process-related aspect *family promotion* or with regard to the structural aspect *SES*?

Any effect of *family promotion* or *SES* will support the assumption that extended education cannot make up for the effects of any of these variables on language development. However, although such effects might exist, there could still be some compensatory effects of extended education in the sense that there is an interaction effect of extended education with family promotion and/or *SES* in favor of those with low scores on these variables. If this is true, groups with low family promotion and/or low *SES* will benefit more from extended education offerings.

Based on the theoretical and empirical findings described above, we tested the following hypotheses:

1. In addition to the effect of intensive attendance in extended education, the process-related aspect *family promotion* has a stronger effect on the development of students' language achievement than the structural familial aspect *SES* does.
2. In addition to the effect of intensive attendance in extended education, the influence of the structural familial aspect *SES* is mediated by the process-related aspect *family promotion*, which has an additional direct effect.
3. Extended education attains a compensatory effect with regard to an unfavorable social background when students attend intensively. As a compensatory effect we expect that students from unfavorable social background who attend extended education will show better development in language achievement than students from favorable social background who attend extended education. This effect is not expected for children who do not attend extended education.
4. The compensatory effect is stronger with regard to the process-related aspect *family promotion* than with respect to the structural familial aspect *SES*.

## 4. Methods

### 4.1 Design and sample

The hypotheses were tested in a longitudinal study in the German-speaking part of Switzerland. In the study design there were two groups: students at all-day schools who attended extended education intensively and students who were at

schools with regular hours of instruction and did not attend extended education. Drawing the sample was done in three steps with selected schools with extended education. In the selected cantons in the German-speaking part of Switzerland, all all-day schools willing to participate were included in the sample. These schools were matched with schools in communities ("communes," smallest political unit in Switzerland) that were comparable with respect to number of residents, proportion of immigrants, level of unemployment, and mean level of education. Since all-day schools are mainly found in cities and agglomeration communes, due to the chosen procedure this concentration on these communes is also reflected in the total sample. As a result, there are no significant differences in socio-demographic features between the classes of the groups. The second step was random selection of schools. In the third step, children in the school classes and their families were randomly selected. This was a cluster sample; it comprised  $N = 295$  students from Grade 1 in the school year 2006/07 in 43 school classes at 35 primary schools in 11 cantons. The sample consisted of two groups: (1) students at all-day schools who attended extended education intensively, and (2) students from schools with regular instruction who did not attend extended education. Based on current research described above, we assumed that an effect of extended education can only be expected if student's exposure to this type of education exceeds a minimum level; hence, we selected only those students whose participation in extended education was at minimum 7.5 hours a week (median of the total sample of extended education), spread over a minimum of three days. We will refer to these students as "intensive participants". Students who attended extended education intensively made up 17.3 % ( $n = 51$ ) of these children; 82.7 % ( $n = 244$ ) attended regular hours of instruction only. At the start of the study the average age of the children was 7 years ( $M = 7.17$ ;  $SD = .53$ ); 78.5 % of the children had Swiss nationality, and in 86.7 % of the families the language spoken at home was Swiss German. Of the participating children, 83.7 % were being raised in a traditional family form (mother, father, child [or children]) with married parents. In 32.8 % of the families at least one parent had a university degree.

## 4.2 Instruments and variables

*Dependent variables.* School achievement in language was measured at three different points of measurement: at the end of Grade 1, 2, and 3. Achievement in language was assessed with the *Würzburger Leise Leseprobe* [Würzburger test of silent reading] (WLLP) (Küspert & Schneider, 1998). This speed test measures the speed of decoding (= reading) by presenting written words in combination with four alternative illustrations, of which the child is to indicate the matching picture. The scores were transformed to  $t$  values ( $M = 50$ ,  $SD = 10$  in the total sample of the study).

*Independent variables.* The variable *extended education* was a dummy variable (1 = students who attended extended education intensively [yes], 0 = students with

regular hours of instruction who did not attend extended education [no]). Students' intelligence (IQ) was measured using the *Grundintelligenztest Skala 1* (CFT 1, Basic Intelligence Test Scale 1) (Weiss & Osterland, 1997) at the beginning of Grade 2. CFT 1 largely measures fluid, general intelligence. *Gender* was also included as a variable (0 = boy; 1 = girl). *SES*, a structural aspect of the family, was based on international standard classifications of occupations (ISCO-88 COM) and corresponds to the average familial level of occupation (scale from 1 to 4: 1 = lowest level, ISCO 9; 2 = ISCO 4–8; 3 = ISCO 3; 4 = highest level, ISCO 1, 2) (Ganzeboom, de Graaf & Treiman, 1992; Schüpbach, Wustmann, Mous, Bolz, & Herzog, 2008). *Family promotion* of the child's development and active stimulation – i.e., the process quality in the family – is widely understood as referring to familial encouragement and educational interactions in the family (Schüpbach, 2010). In this study, family promotion of the child's development was measured with an adaptation of the German version of the *Home Observation Measurement of the Environment* (HOME) *Inventory* (Caldwell & Bradley, 1984). Although factor analysis on the German version failed to replicate the subscales of which the original English version consists, three factors could nevertheless be identified that formed the basis for three newly defined subscales that were then to be used in this study. One of the three scales, the scale *family promotion* of the child's development and active stimulation, was used as an indicator for process quality (Schüpbach et al., 2008). This scale contains nine items (Cronbach's  $\alpha = .62$ ; scale values vary from 0 = low to 1 = high:  $M = 0.84$ ,  $SD = 0.18$ ) (example items: Do you set boundaries (for the child) and insist that these boundaries are respected? Does the child have the opportunity to use and improve his or her abilities and talents also outside the family? Have you or a family member visited a museum or an exhibition with the child? Or made it possible for the child to visit a museum or exhibition?). Table 1 and 2 show the descriptive values separately for the two groups and the intercorrelations of all dependent and independent variables. Here it should be mentioned that there was a very highly significant correlation between SES and family promotion ( $r = .46$ ;  $p \leq .001$ ). This means that the structural and the process-related aspects are not independent of one another and that they explain a common variance.

Table 1: Descriptive statistics (raw means and standard deviations) of students with extended education compared with students without extended education (group)

	Group						<i>t</i> test		
	Students with extended education [yes]			Students with regular school hours who attended no extended education [no]					
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>
Achievement in language at the end of Grade 1 ( <i>T</i> value)	36	46.80	7.32	172	49.43	10.31	67.73	1.81	.07
Achievement in language at the end of Grade 2 ( <i>T</i> value)	32	51.98	7.68	195	50.60	9.90	49.61	-0.90	.37
Achievement in language at the end of Grade 3 ( <i>T</i> value)	26	52.15	10.32	162	49.12	10.34	186.00	-1.39	.03*
Gender (0 = boys; 1 = girls)	37	0.65	0.48	212	0.46	0.50	1.00	4.61 <sup>a</sup>	.03*
IQ	33	104.70	12.38	204	101.43	12.24	235.00	-1.42	.16
SES (1 = low to 4 = high)	35	3.57	0.74	207	3.10	0.94	54.57	-3.33	.12
Family promotion (0 = low to 1 = high)	37	0.87	0.16	212	0.83	0.18	247.00	-1.41	.16

<sup>a</sup>CHI-Quadrat.\**p* ≤ .05 (two-tailed testing).Table 2: Intercorrelations of dependent and independent variables (*N* = 295)

	1	2	3	4	5	6	7
1 Achievement in language at the end of Grade 1 ( <i>T</i> value)	1						
2 Achievement in language at the end of Grade 2 ( <i>T</i> value)	.65***	1					
3 Achievement in language at the end of Grade 3 ( <i>T</i> value)	.61***	.76***	1				
4 Gender (0 = boys; 1 = girls)	-.08	.07	.10	1			
5 IQ	.24***	.35***	.42***	.10	1		
6 Extended education (1 = yes, 0 = no)	-.10	.05	.10	.14*	.09	1	
7 SES (1 = low to 4 = high)	.07	.24***	.18*	-.07	.16**	.18**	1
8 Family promotion (0 = low to 1 = high)	.06	.23***	.27***	.05	.11	.09	.46***

\**p* ≤ .05. \*\**p* ≤ .01. \*\*\**p* ≤ .001 (two-tailed testing).

### 4.3 Analysis and model specification

The statistical analyses were computed with the programs SPSS 17.0 and Mplus Version 6 (Muthén & Muthén, 1998–2010). Hypotheses 1 to 4 were tested using linear latent growth models over three time points. This procedure modeled the status of development at the end of Grade 1 (intercept), which in these models served as the baseline, and development towards the end of Grade 3 (slope). In Model 1, the basic model testing Hypotheses 1 and 2, effects of the individual background variables *IQ*, *gender*, and *extended education* were estimated. In Models 2 and 3 effects of the independent variables *SES* (structural aspect) and *family promotion* (process-related aspect) were estimated separately, in Model 4 jointly (Models 2, 3, and 4 test Hypothesis 1, Model 4 tests Hypothesis 2). To test Hypothesis 3, effects of *SES* and the interaction term *extended education*  $\times$  *SES* were estimated in addition to the individual background variables in Model 5. In Model 6, the same was done for *family promotion*. For an interpretable solution, all metric variables were z-transformed. In all analyses, we used the option ‘type = complex’ in Mplus to take into account the cluster structure of the data by schools (intraclass correlations from .23 to .26;  $p \leq .001$ ) when estimating the standard error. Robust maximum likelihood estimation was used (Mplus option ‘MLR’) for model estimation and model evaluation. To deal with missing values, the full information maximum likelihood approach (Mplus option ‘FIML’) was chosen. If a case has missing values for a subset of variables, they are replaced by expected values as estimated by this approach; if *all* values are missing for a case, that case is excluded from the analysis. Here, after exclusion of all cases with missing values on all predictors or dependent variables, of the subsample of  $n = 295$  students at  $n = 35$  schools (cluster),  $n = 230$  students ( $n = 37$  students with extended education;  $n = 193$  students who attended no extended education) at  $k = 34$  schools were included in the analyses. As all the hypotheses tested were directional, we analyzed the data with one-tailed tests. There were no significant differences in the means of the target variables or the covariates between students who participated in the study at all four time points and students who dropped out of the study earlier. This means that the missing data is not systematically biased.

## 5. Results

Table 3 shows the results of the linear latent growth models for effects of extended education and in particular the effects of structural and process-related aspects of social background on language achievement (Hypotheses 1 and 2). In Model 1, the basic model, effects of the independent variables *IQ*, *gender*, (individual background) and *extended education* on language achievement at the end of Grade 1 (basic value) and on improvement in language achievement from the end of Grade 1 to the end of Grade 3 were estimated. The model showed an accept-

able fit (Bentler & Bonett, 1980; Browne & Cudeck, 1993) ( $\text{Chi}^2 = 10.05$ ;  $df = 4$ ; CFI = .970; RMSEA = .080). At the first point of measurement (end of Grade 1), there was a highly significant effect of *IQ* ( $b = 2.57$ ,  $p \leq .001$ ) but no effect of *gender*. There was no difference between the two groups in their language achievement (intercept): Students at all-day schools who attended extended education did not differ in their language achievement from students who attended only regular hours of instruction. But there was a significant difference between these groups in improvement of language achievement from the end of Grade 1 to the end of Grade 3 ( $b = 2.47$ ,  $p \leq .05$ ) (slope): The students with extended education showed more improvement in their language achievement. In addition, the individual background variables *gender* ( $b = 1.68$ ,  $p \leq .01$ ) and *IQ* ( $b = 0.79$ ,  $p \leq .01$ ) also had significant effects on the development of achievement. In Model 2, the variable *SES*, the structural family aspect of social background, was included as an additional variable. For *SES* we found an effect on the level of language achievement ( $b = 1.20$ ,  $p \leq .05$ ) at the end of Grade 1 (intercept) but not on the development of language achievement ( $b = 0.18$ , n.s.) (slope).

Table 3: Development of language achievement with regard to structural and process-related aspects of social background, linear latent growth models ( $n = 230$ ;  $k = 34$ )

	Model 1		Model 2		Model 3		Model 4	
Predictors	Intercept <i>b</i> (SE)	Slope <i>b</i> (SE)	Intercept <i>b</i> (SE)	Slope <i>b</i> (SE)	Intercept <i>b</i> (SE)	Slope <i>b</i> (SE)	Intercept <i>b</i> (SE)	Slope <i>b</i> (SE)
Gender (0 = boys; 1 = girls)	-1.79 (1.21)	1.68** (0.63)	-1.51 (1.30)	1.90** (0.66)	-1.89 (1.23)	1.61** (0.63)	-1.74 (1.38)	1.71** (0.66)
IQ	2.57*** (0.69)	0.79** (0.30)	2.48*** (0.69)	0.73* (0.35)	2.46*** (0.71)	0.72** (0.32)	2.46*** (0.71)	0.70* (0.34)
SES (1 = low to 4 = high)			1.20* (0.55)	0.18 (0.38)			0.84 (0.66)	-0.11 (0.27)
Family promotion					1.10* (0.66)	0.67* (0.36)	0.66 (0.82)	0.72* (0.37)
Extended education (1 = yes, 0 = no)	-2.52 (1.81)	2.47* (1.21)	-3.48* (1.84)	2.30* (1.19)	-2.93* (1.67)	2.29* (1.15)	-3.48* (1.79)	2.27* (1.13)
Covariance intercept/slope	-0.65 (5.08)		-0.05 (4.78)		-0.91 (5.08)		-0.51 (4.94)	
$R^2$	.12* (0.05)	.57 (0.49)	.15** (0.06)	.79 (0.95)	.14** (0.05)	.70 (0.64)	.15** (0.05)	.78 (0.81)
	$\text{Chi}^2 = 10.05^*$ ; $df = 4$ ; CFI = .970; RMSEA = .080		$\text{Chi}^2 = 13.26^*$ ; $df = 5$ ; CFI = .962; RMSEA = .085		$\text{Chi}^2 = 10.11^*$ ; $df = 5$ ; CFI = .977; RMSEA = .066		$\text{Chi}^2 = 14.32^*$ ; $df = 6$ ; CFI = .965; RMSEA = .078	

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$  (one-tailed testing).

In Model 3 with the process-related aspect of social background *family promotion*, there was an effect of promotion and stimulation of the child on language achievement at the end of Grade 1 ( $b = 1.10$ ,  $p \leq .05$ ) (intercept), and also an effect on the improvement of language achievement ( $b = 0.67$ ,  $p \leq .05$ ) (slope). Thus, *family*

*promotion* had a direct effect on the development of language achievement in addition to the effect of extended education. The influence of the process-related aspect *family promotion* was also stronger than the influence of the structural aspect *SES* in addition to the effect of extended education. Finally, in Model 4, the influence of both aspects of social background was estimated simultaneously. With regard to the achievement level, neither *SES* nor *family promotion* (intercept) had an effect. In addition, the effect of the variable *extended education* increased and also reached significance ( $b = -3.48, p \leq .05$ ), as in Models 2 and 3. This means that for students with extended education, achievement in language was lower at the end of Grade 1 than for students who did not attend extended education. The development of language achievement revealed a significant effect of *family promotion* ( $b = -0.72, p \leq .05$ ), but no effect of *SES* (slope). It should be pointed out that here a high degree of multicollinearity between *SES* and *family promotion* can be assumed, due to the high intercorrelations ( $r = .46, p \leq .001$ ; see Table 2), and for this reason the effect disappears (intercept).

To examine the compensatory effect of extended education (Hypothesis 3) – in addition to the structural aspect of social background *SES* – the interaction term *extended education*  $\times$  *SES* was included in Model 5, (see Table 4).

**Table 4:** Effects of structural and process-related aspects of social background, linear latent growth models ( $n = 230$ ;  $k = 34$ )

	Model 5		Model 6	
Predictors	Intercept $b$ (SE)	Slope $b$ (SE)	Intercept $b$ (SE)	Slope $b$ (SE)
Gender (0 = boys; 1 = girls)	-1.48 (1.30)	1.87** (0.66)	-1.86 (1.22)	1.51** (0.63)
IQ	2.46*** (0.69)	0.75* (0.34)	2.47*** (0.71)	0.75** (0.32)
SES (1 = low to 4 = high)	1.17* (0.59)	0.23 (0.38)		
Family promotion			1.15* (0.71)	0.44 (0.35)
Extended education (1 = yes, 0 = no)	-3.72* (1.79)	2.72* (1.45)	-2.87* (1.60)	1.47* (0.87)
Extended education $\times$ SES	0.45 (1.95)	-0.80 (0.95)		
Extended education $\times$ family promotion			-0.18 (1.12)	2.92*** (0.47)
Covariance intercept/slope	0.17 (4.75)		-1.26 (5.02)	
$R^2$	.15** (0.06)	.83 (1.03)	.14** (0.05)	.78 (0.62)
	Chi <sup>2</sup> = 14.82*; $df$ = 6; CFI = .964; RMSEA = .080		Chi <sup>2</sup> = 12.57*; $df$ = 6; CFI = .977; RMSEA = .068	

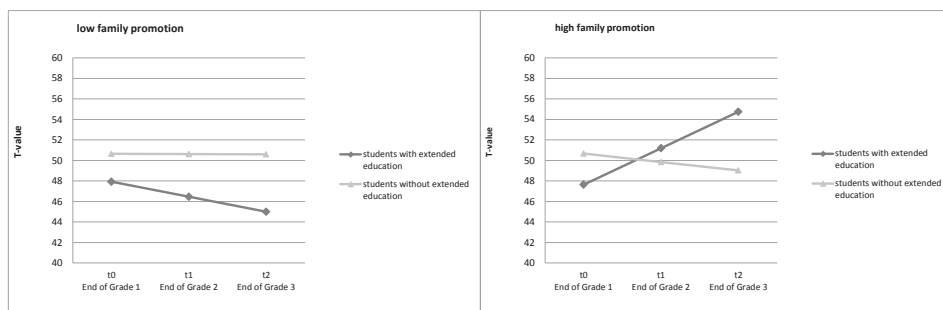
\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$  (one-tailed testing).



However, this interaction term was not significant. Students with extended education and with a low SES did not show a better development than students with high SES. Hence, extended education did not succeed in compensating for a low SES. Finally, in addition to *family promotion*, Model 6 contained the interaction term *extended education* x *family promotion*. This interaction term turned out to be highly significant ( $b = 2.92, p \leq .001$ ): The achievement of students with and without extended education who differed in family promotion developed differently.

The effect of the variable *extended education* ( $b = 1.47, p \leq .05$ ) was estimated for two different values of the metric independent variable *family promotion*: one standard deviation below the mean (low familial promotion) and one standard deviation above the mean (high family promotion) (see Figure 1).

Figure 1: Improvement of language achievement – values for low and high family promotion (adjusted estimated means, controlled for IQ and gender) ( $n = 230; k = 34$ )



Note. Low family promotion = 1 standard deviation below the mean. High family promotion = 1 standard deviation above the mean.

Aiken and West (1991) recommend this procedure for the interaction of metric predictors as a moderator. With this procedure, the effect of the predictor *extended education* can be interpreted as an estimation of the difference between students with and without extended education showing the respective value of the variable. The results showed for students with low family promotion that the development of students who attended extended education did not differ significantly from that of students who did not attend extended education ( $b = -1.46, p = .08$ ). At the beginning of primary school, the development of language achievement was largely parallel or even slightly worse for students with extended education. This is different for children with high family promotion. Students who attended extended education started from a lower level and showed greater improvement up to the end of Grade 3 than students who did not attend extended education ( $b = 4.39, p \leq .001$ ). Thus, there was no compensation for family promotion as well; instead, there was an opposite effect of a reciprocal reinforcement.

## 6. Discussion

Based on previous research, we started out in this contribution from the assumption that extended education has a positive effect on the child's development of language achievement. In addition to the effect of intensive attendance in extended education, we examined the differential effects of process-related familial aspects (using the example of *family promotion*) compared to structural familial aspects (exemplified by *SES*) on the development of primary school students' language achievement (from the end of Grade 1 to the end of Grade 3). Overall, with regard to the development of language achievement from the end of Grade 1 to the end of Grade 3, the results of the study show that students who attend extended education intensively have greater gains than students who attend regular school instruction only and do not attend extended education. Apart from the effect of extended education there is evidence that the process-related aspect of *family promotion* has a stronger effect on the development of language achievement than the structural aspect *SES* from the end of Grade 1 to the end of Grade 3. For *SES* an effect is revealed concerning the achievement level, but not concerning improvement, which is the focus here. However, family promotion has a direct influence on improvement, so that family promotion is more important than *SES*; this supports the first hypothesis. As *SES* does *not* have a direct effect on the development of language achievement, it can be concluded that, in addition to the effect of extended education, the effect of the structural familial aspect *SES* is not mediated by the process-related familial aspect of promotion. Thus, Hypothesis 2 has to be rejected.

This contribution also investigated whether extended education attains a compensatory effect with regard to unfavorable social background when students attend the offerings of extended education intensively. As the results show, this is not the case for children from unfavorable social background – neither in terms of low *SES* nor in terms of low family promotion. Thus, there are no differential effects. Accordingly, children from unfavorable social background who attend extended education do not show a better development than children from a favorable social background using extended education. Therefore, Hypothesis 3 has to be rejected as well. The same is true for Hypothesis 4, as there is no compensatory effect for either the process-related aspect of family promotion or for the structural familial aspect *SES*.

A limitation of this study is the small sample size. Further, more differentiated research with larger samples is needed to investigate the multifaceted aspects of social background, extended education, and their effects and mechanisms in this new research field in the German-speaking part of Europe. Due to the sample size, it is possible that small effects exist that are not detected. Further children in families with high *SES* are overrepresented in the sample. If effects of *SES* on language achievement are found, then they are more a reflection of differences between children with medium and high *SES*.

In the research literature it is commonly demanded that both structural and process-related family aspects of social background be considered in the analyses. We applied this approach in this study in the research field of effectiveness of extended education and especially in investigating compensatory effects of extended education. Up to now specific findings on these issues have been lacking (in German-speaking countries). In line with findings from school-related research in general, we are able to confirm the relevance of family promotion and stimulation, i.e., the quality of the learning environment at home for the development of language achievement as well. For the student's development in this field, family promotion and hence process quality turn out to be more important than a family's SES. This finding is in line with Totsika and Sylva (2004) and Helmke and Weinert (1997). Helmke and Weinert (1997), for example, pointed out that associations between social background and school achievement did not result from social background per se, but from school achievement-related features of parental behavior, such as a stimulating environment combined with parental instructions.

But in contradiction to Baumert and Maaz (2006), an effect on the level of achievement – namely, that structural familial aspects are mediated by process-related aspects – could not be found for the development of achievement. For the development of language achievement in the field of extended education, the cultural practice of a family, i.e., the level of stimulation in the family, the process quality, seems to be more relevant. This finding is especially remarkable in view of the fact that the internal consistency of the scale *family promotion* is fairly modest. In addition, this study is one of the first in this field that refers explicit to the student's language development and not to the level of achievement as in most of the published findings. For the achievement level at the time of school entry, however, SES, measured as parents' occupation or occupational status, appears to be more important (direct effect). Thus, a differential effect of diverse aspects of social background on language achievement or its development can be confirmed.

Overall, the findings of this study do not provide evidence for compensatory effects of extended education for students with an unfavorable social background, neither in terms of low SES nor in terms of low family promotion and stimulation. On the contrary, the effect of family promotion shows that children who are strongly supported at home profit particularly from extended education. Thus, a "Matthew effect"<sup>2</sup> occurs in this context. This result agrees with to initial findings from Germany by Schröder-Lenzen and Mücke (2010). They found that extended education had no compensatory effects for primary school children. In a meta-analysis of studies with developmentally at-risk children in the United States, Lauer et al. (2006) found more positive effects of attendance especially for language achievement than this study in Switzerland. Positive effects emerge in particular when extracurricular activities are academically-oriented or curriculum-compatible (Mahoney, 2000). Discrepancies with the findings of this study may

2 Named after Matthew 25:29, in the parable of the talents: "For unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken even that which he hath."

go back to the fact that after-school programs or extracurricular activities in the United States pursue educational aims, such as improvement of school achievement, for a specific group of children or adolescents. Extended education in all-day schools in Switzerland is often less goal-oriented. Here, various societal, social, economic, and educational expectations are provided in extended education. Therefore, it is more difficult to determine specific educational objectives. Based on findings in the United States, one might assume that extended education and specific educational programs focusing on children with low family promotion or children at-risk generally might have a potential for compensatory effects and might decrease social disparities in Switzerland as well.

In sum, there is no compensatory effect, but all students regardless of their social backgrounds can benefit from extended education.

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